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Digital Transformation in Financial Management of Medan Amplas District Government: Challenges and Solutions

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Abstract

Objective: This study explores the obstacles and opportunities in applying digital technology in government financial management in the Medan Amplas sub-district. **Theoretical framework:** This study refers to the theory of technology adoption, especially the TAM (Technology Acceptance Model) model, which explains the factors that influence the acceptance of technology by users. **Literature review:** Digital Transformation in Local Government, Financial Management in Local Bureaucracy. **Methods:** This study uses a qualitative research approach with field observation techniques, in-depth interviews, and document analysis to collect data from sub-district officials and the community. **Results:** This study shows that the main challenges in digital transformation are the decline in budget commitment to the digitalization sector, which has the potential to hinder the improvement of the quality of digital services at the sub-district level, and the limitations of technological infrastructure. However, some solutions that can be applied include increasing digital training for government staff, providing better infrastructure, and integrating financial management systems with more user-friendly digital platforms. **Implications:** The importance of sustainable fiscal support as a prerequisite for the success of digital transformation at the local level, and the importance of policies that support the development of digital skills of government officials and investment in adequate technological infrastructure to support the success of digital transformation. **Novelty:** This research is based on a contextual analysis of the implementation of digital transformation at the sub-district level, which is still rarely done in government financial management studies in Indonesia.

Keywords: digital, transformation, financial management, government, challenges.

INTRODUCTION

Digital transformation has become the mainstream in public sector management in the Industrial Revolution 4.0 era. Governments at various levels are required to adapt to advances in information technology to create more effective, efficient, transparent, and accountable governance [1]. One important aspect of such governance is financial management, which requires digital system integration to minimize the risk of irregularities and increase speed and accuracy in the administrative process.

In the context of local government, especially at the sub-district level, digital transformation plays an important role as a tool for modernizing services and managing public resources [2]. Sub-districts as government units that interact directly with the community have a strategic position in realizing bureaucratic reform [3]. Therefore, the digitalization of the financial system at the sub-district level is a crucial step in supporting the principles of good governance and the effectiveness of public services. However, in reality, there are still many sub-districts in Indonesia that experience obstacles in implementing digital systems optimally. Factors such as limited technological infrastructure, low digital literacy, and the unavailability of an integrated system are often the main obstacles in this transformation process. These problems are often not addressed properly.

Medan Amplas District as part of the Medan City Government is a strategic and rapidly developing area. However, based on initial observations, this district still faces several challenges in implementing a digital-based financial management system. The obstacles faced include limited hardware and software, lack of technical training for officials, and less than optimal policy support from the city government to encourage the acceleration of digitalization at the district level. The problem of digital transformation in Medan Amplas District is not only the efficiency of the work of officials but also the quality of public services. When the financial system is still manual or semi-digital, the budget reporting and accountability process becomes slower and prone to errors. This is certainly contrary to the spirit of transparency and accountability echoed in bureaucratic reform.

Various previous studies have highlighted the importance of digital transformation in public-sector financial management. For example, research by Dewila states that the implementation of an information technology-based financial system in local government can increase budget efficiency and minimize the opportunity for misappropriation [4]. In addition, a study by Puspitawati also confirmed that the success of the digitalization of financial management is greatly influenced by the quality of human resources, especially in terms of digital literacy and the ability to operate financial applications [5]. On the other hand, the Technology Acceptance Model theory developed by Davis (1989) is one of the theoretical frameworks often used in assessing technology acceptance in the public sector [6]. This model emphasizes two main factors: perceived usefulness and perceived ease of use as the main determinants in the technology adoption process. Various studies that adopt TAM show that obstacles in the perception of usefulness and ease of use are the main causes of resistance to digital transformation, including in government bureaucracy. However, most of these studies were conducted in the context of central government or city/district government, not at the sub-district level as the frontline administrative entity for public services.

Pedersen's study on e-government implementation in districts shows that policy support and political will from regional leaders play a major role in driving the success of digital transformation [7]. This opens up a debate about whether the success of digitalization is structural top-down or whether it depends on local initiatives at the technical implementation level such as sub-districts. This is where the difference in context occurs because there has not been much research that explores digital transformation initiatives carried out by sub-district-level government institutions, which tend to have limited autonomy, budget, and human resources.

The research gap begins to appear when considering that the majority of previous studies have focused on aspects of technology and macro policies without specifically exploring the implementation challenges at the micro level, especially in sub-districts. This study is here to fill this gap, namely by making Medan Amplas Sub-district a case study locus to explore the unique challenges that arise in the digitalization of financial management at the level closest to the community. Digitalization of financial management should be a tool to strengthen the role of sub-districts as providers of fast, accurate, and transparent public services. Therefore, it is important to conduct research that focuses on identifying real challenges in the field and

formulating appropriate and contextual solutions based on existing conditions in Medan Amplas Sub-district. Thus, this study offers a new contribution (novelty) by exploring digital transformation at the local administration level that is often overlooked by academics and policymakers. This gap is the main foundation for exploring relevant, contextual, and applicable solutions for sub-districts and other local governments in Indonesia.

Based on this background, the basic question to be answered through this study is: What are the challenges and relevant solutions in implementing digital transformation of financial management in Medan Amplas District? This question is the basis for exploring the phenomena that occur and formulating the right strategy to deal with them. The main objective of this study is to identify the main obstacles faced by Medan Amplas District in the process of digital transformation of financial management. This study also aims to develop alternative solutions that can be implemented directly and sustainably by the sub-district government and the city government.

LITERATURE REVIEW

Digital Transformation in Local Government

Digital transformation in local government is a multidimensional process that involves more than just the deployment of new technology. It requires a comprehensive change in how public institutions operate, including adjustments in organizational structures, decision-making processes, and work culture. As highlighted by Zhang, digital transformation is not merely a technical upgrade, but a strategic shift that demands rethinking public service delivery mechanisms. In this context, technology becomes an enabler for innovation, efficiency, and improved governance at the local level [2].

One of the key benefits of digital transformation is the automation of financial management processes. In local governments, where resources and manpower are often limited, digital systems can significantly reduce the administrative burden by simplifying tasks such as budgeting, expenditure tracking, and reporting. Digital financial tools allow for real-time data monitoring and integrated reporting systems, which not only speed up internal workflows but also improve the accuracy and traceability of financial records. This leads to more efficient use of public funds and supports better fiscal planning [8].

Moreover, the integration of digital systems enhances transparency and public accountability. Through open data platforms and e-budgeting tools, citizens can access information about how public money is allocated and spent. This accessibility promotes trust and encourages civic participation, as communities are better informed and empowered to engage with local government initiatives. The shift towards transparency also pressures institutions to operate with higher integrity and responsiveness, reinforcing the democratic principles in public administration.

Financial Management in Local Bureaucracy

Financial management in local bureaucracy, particularly at the sub-district level, is often hampered by structural and operational limitations. These include insufficiently trained human resources, the use of outdated manual bookkeeping systems, and delays in financial reporting. Manual systems are not only time-consuming but also prone to human error, which can compromise the accuracy and reliability of financial data. These administrative inefficiencies create bottlenecks in budget execution and hinder effective public service delivery, especially in dynamic and fast-paced administrative environments [9].

According to Haleem, one of the core issues in sub-national financial management is the lack of system integration. Local governments often operate with fragmented financial tools that are not synchronized with central government systems. This leads to duplication of efforts, inconsistent data, and poor coordination between administrative levels. In budget

planning and implementation, this fragmentation results in misalignment of priorities, inefficient allocation of resources, and delayed disbursement of funds. Without a unified and real-time financial information system, it becomes difficult to ensure fiscal discipline and accountability [10].

To overcome these limitations, financial digitalization is viewed as a strategic necessity. Digital financial management systems can standardize and streamline budget preparation, expenditure tracking, and reporting processes. By automating routine financial tasks and enabling data integration, these systems reduce errors, increase transparency, and support timely decision-making. Furthermore, they allow for real-time oversight by supervisors and auditors, which enhances control mechanisms and curbs the risk of mismanagement. Thus, digital transformation in financial management is not just a technical upgrade it is a governance reform that strengthens public sector performance at the grassroots level.

METHODOLOGY

This study uses a descriptive qualitative approach to gain an in-depth understanding of the process, challenges, and solutions to digital transformation in financial management in Medan Amplas District [11]. This approach was chosen because it is considered relevant to explore complex and contextual social phenomena, especially those related to the implementation of technology in local-level bureaucracy. With this approach, researchers can capture the dynamics that occur in the field directly and comprehensively.

Data collection techniques were carried out using three main methods, namely semi-structured interviews, participant observation, and documentation studies [12]. Interviews were conducted with sub-district officials who were directly involved in financial management, to gather information regarding perceptions, experiences, and obstacles in the digitalization process. Observations were conducted to directly observe ongoing financial administration practices, as well as the use of digital systems in daily activities. In addition, researchers also reviewed supporting documents such as financial reports, work guidelines, and internal sub-district policies to enrich the data collected. The data obtained were analyzed using the interactive analysis model from Miles and Huberman, which consists of three main stages: data reduction, data presentation, and conclusions [13]. Data reduction is done by sorting relevant data, and then presenting it in the form of a matrix and thematic narrative to facilitate interpretation. The process of conclusions is carried out continuously from the beginning of data collection to the end of the study. To maintain the validity of the findings, researchers apply triangulation of sources and methods, namely by comparing the results of interviews, observations, and documents, to ensure the consistency and credibility of the information obtained.

Table 1. Research Method Used in This Study

Aspect	Description
Type of Research	Descriptive qualitative research
Approach	Descriptive qualitative approach
Research Objective	To gain an in-depth understanding of the process, challenges, and solutions to digital transformation in financial management in Medan Amplas District
Rationale for Approach	Chosen because it is suitable for exploring complex and contextual social phenomena, especially in the context of technology implementation in local bureaucracy
Key Figures Analyzed	Sub-district officials are directly involved in financial management.

Main Data Sources	Semi-structured interviews, participant observation, documentation (e.g., financial reports, work guidelines, internal policies)
Method of Analysis	Interactive analysis model by Miles and Huberman: data reduction, data presentation, and conclusion drawing
Theoretical Framework	Implicitly grounded in qualitative field research with emphasis on contextual understanding; no specific named theory, but using qualitative methodological framework.
Focus of Analysis	Implementation process of digital transformation, challenges faced, and solutions adopted in financial management practices at the sub-district level
Expected Outcome	A comprehensive and credible understanding of digital transformation dynamics in local financial management, supported by triangulated data

RESULTS AND DISCUSSION

Current Condition of Financial Management in Medan Amplas District Before Digitalization

Medan Amplas District has 228 employees, consisting of 24 sub-district ASNs, 58 sub-district ASNs, and 146 Casual Daily Employees (PHL). This composition shows that most of the technical implementers in the Medan Amplas District are dominated by PHL workers who do not have permanent employee status. This imbalance in employee composition is a challenge in the context of manual financial management before the digital transformation. Dependence on non-ASN workers in the administrative process is prone to inconsistency and weak mastery of the system, especially if the system is still manual or semi-digital. As Talwar stated, organizations that rely heavily on certain individuals in manual systems are at risk of administrative disruption when there is a rotation or change of employees. In this condition, financial management that relies on physical recording and manual input on spreadsheets becomes inefficient and complicates the internal control and audit process.

Table 2. Medan Amplas District ASN Data

No	ASN Data	Total
1	Sub-district ASN	24
2	Village ASN	58
3	Total PHL	146
	Total	228

Before the digital transformation, financial management in Medan Amplas District still relied on manual and semi-digital systems, which posed risks to efficiency and data accuracy. The process of recording transactions and preparing financial reports is carried out using traditional methods, namely using ledgers and spreadsheets. This procedure slows down the flow of information, increases the potential for human error, and makes direct supervision difficult. This is in line with the opinion of Banerjee, et al., who stated that manual systems are prone to inaccuracies in recording and managing public finances [14]. The use of simple software that only relies on spreadsheets often does not support data integration between work units in the sub-district. Based on this, the implementation of a technology-based system is an urgent need to improve the efficiency and transparency of financial management.

This situation raises problems in the internal audit and supervision process, where not all transactions are recorded properly and are difficult to track. In a manual system, financial document management must be stored in physical form, which requires large storage space and slows down the data search process. This is in contrast to the concept put forward by Hasan, who explains that a digital-based system can increase efficiency and facilitate access to financial information, as well as reduce the time needed to verify and validate transactions [15]. Not only that, accountability and transparency become difficult to achieve because stakeholders cannot access financial reports in real-time or directly without complicated procedures.

Delays in preparing budget reports are also a significant obstacle. Before digitalization, each budget submission had to go through several layers of bureaucracy that took a long time. This hampers the effectiveness of budget decision-making and affects the speed of public services that can be provided by the sub-district government. In this context, Treleven stated that the implementation of a digital system would reduce data processing time and speed up decision-making in government financial management [16]. Not only does it speed up the administrative process, but the digital system also allows for instant reporting that speeds up the evaluation process by superiors and stakeholders. Reliance on employees who master manual systems makes financial management less flexible and prone to administrative errors if there is employee rotation. This phenomenon has been identified by Talwar who shows that organizations that rely on manual systems are highly dependent on certain individuals who have special knowledge or skills in running the system [17]. As a result, when the responsible employee leaves or changes duties, the financial administration process can be disrupted. Changes in employees can also cause inconsistencies in data recording, which of course affects the financial reports produced.

To create better accountability, the implementation of digital systems is essential to replace such manual practices. Information technology has been proven to reduce dependence on certain personnel, as well as facilitate data access and transparency [18]. Along with that, the digital system allows for more structured data management, reduces room for human error, and accelerates the data verification and validation process. Digitalization also allows for tighter control over the flow of funds, thereby minimizing the potential for budget leaks that occur during the financial management process. One of the challenges faced by Medan Amplas District is the inability to monitor and supervise financial expenditures directly in a manual system. Processes that require layered verification hinder the acceleration of supervision and control. According to Salmon, efficient financial management depends not only on the system but also on the organizational structure and procedures that can support the implementation of policies quickly and transparently [19]. Manual processes that require approval at multiple levels in the bureaucracy only slow down evaluation and add to operational costs [9]. In addition, in the manual system, the difficulty in real-time monitoring makes it difficult for sub-district leaders to make quick and accurate decisions. Financial data needed for decision-making is often only available after a long time, thus hampering responsive policy-making to developing situations. For example, the inability to access budget information directly limits the policy of allocating the budget to sectors that need it more. As explained by Radovanović, accurate and fast data-based decisions are very important in regional budget management [8].

The manual audit process also affects the audit results and validity of financial reports. In many cases, auditors must manually check physical documents, which is not only time-consuming but also risks losing important data. Delayed audit results can reduce public trust in the transparency and accountability of financial management at the sub-district level. Implementing a digital system will simplify the audit process because auditors can directly access financial data in a structured manner and can verify more efficiently [20]. Given these conditions, digitalization becomes an unavoidable necessity. This is in line with the concept put forward by Goh, which states that the application of digital-based information systems in public financial management can improve the quality of resource management, minimize

human error, and accelerate decision-making [21]. Digital systems can also store data centrally, making it easier to search for information, and allowing real-time data updates.

In the long term, digital transformation is expected to have a positive impact on the financial performance of sub-districts by creating a more efficient and transparent management system. Digitalization will reduce the administrative burden and provide more time for sub-district officials to focus on public services. This is in line with Odebo's view that the digitalization of government is an inevitable step to realize better and more efficient management in the public sector [22]. However, financial management based on a digital system also requires readiness from various parties. Implementation of technology requires adequate infrastructure support and skilled human resources in operating existing devices and systems. Therefore, the digitalization efforts carried out by the Medan Amplas District Government must be accompanied by intensive training programs and ongoing coaching. According to Hosam Alden, ongoing training is essential to develop human resources skills in running new technologies, so that they are not only able to operate the tools but also able to utilize them optimally [1]. In this context, the Medan City Government through the Communication and Information Service must act as a facilitator in ensuring the availability of technological infrastructure that supports the success of digitalization, such as a stable internet network, adequate hardware, and continuous technical support. As explained by Arifin (2020), the success of implementing a digital system is highly dependent on the availability of adequate resources, both in terms of technology, budget, and HR capabilities.

Initial Implementation of Digital Transformation: Strategy and Policy in Optimizing Network Infrastructure

Digital transformation in financial management in Medan Amplas District is a strategic effort that began gradually, triggered by demands for efficiency and transparency in public services. The sub-district government began to realize the importance of utilizing information technology to improve the quality of regional financial governance. The initial stage of this transformation focused on the digitization of financial administration processes that were previously carried out manually. This step is in line with Crosby's opinion that the digitalization of the public sector must begin with the digitalization of basic processes that support efficient public decision-making [23].

The first step taken was to introduce the regional financial information system (SIKD) as a basis for budget and spending management in the sub-district environment. The use of this system aims to improve the accuracy of recording, accelerate reporting, and simplify the budget verification process. The city government, as the policy authority holder, plays an important role in providing software and basic training for sub-district officials. This is Melo's view, which emphasizes the importance of the involvement of the central government or higher authorities in facilitating digital transformation at lower levels of government [24]. In addition, the digitalization strategy in Medan Amplas also began with strengthening internal regulations, including sub-district regulations and circulars that encourage the use of online-based applications in managing financial documents. This strategy aims to create awareness and compliance among officials regarding the importance of implementing a digital system. This regulatory effort is important as emphasized by Feher that the regulatory framework and institutional incentives greatly determine the success of digital system integration in government [25].

At this stage, intensive technical training and socialization are also carried out to ensure that employees understand the system and can operate it. The sub-district government collaborates with the Medan City Communication and Information Service to provide technical training on the use of regional financial system applications and digital data security. This step proves that an effective digital transformation strategy must involve increasing the capacity of human

resources (HR), as expressed by Saxena that HR capacity is one of the key factors in the success of e-government [26].

In its implementation, the sub-district government faces organizational culture challenges, namely resistance from some officials to changes in the work system. Many officials still feel comfortable with the manual system because it is considered easier and does not require technological adaptation. This is a classic obstacle in digital transformation, as expressed by Ferrari in the theory of innovation diffusion that the adoption of new technology takes time and faces psychological and structural obstacles [18]. To overcome this resistance, the government took a communicative and participatory approach, involving sub-district officials in the digital system planning and evaluation process. Officials who were considered to be quicker to adapt were made change agents to help their colleagues understand and use the new system. This strategy is in line with Lewin's theory of organizational change which states the need for an "unfreezing" phase to release old habits before entering the change phase [6].

This initial approach to digital transformation also focused on digitizing the budgeting process and periodic financial reporting. Each work unit in the sub-district is required to report expenditures and budget planning through a predetermined system. With this system, superiors can monitor financial conditions in real time. This model supports Radovanović's view that the use of real-time data in government allows for more responsive and data-driven policies [8]. In addition to technical training, a non-technical approach was also carried out, namely by building collective awareness of the importance of transparency and accountability in public financial management. The sub-district government held a workshop inviting community leaders and academics to provide views on the benefits of digital systems for regional financial management. This supports Lanin's idea that digital change in the public sector must accommodate a social and participatory approach [27].

This transformation targets increasing time efficiency in the process of submitting and disbursing activity funds. Before digitalization, the process of submitting funds took weeks because it had to go through multi-level manual verification. With a digital system, the process can be completed in a matter of days. According to Garcia, efficiency is one of the main results of adopting information technology in the public sector, because it can simplify the bureaucratic chain [28]. Another strategy adopted is the preparation of a new SOP (Standard Operating Procedure) that is in line with the use of digital systems. This SOP regulates the digital workflow from the budget planning stage, activity implementation, and fund disbursement, to reporting. The clarity of this procedure aims to reduce input errors, speed up the process, and increase accountability. This is to the OECD's (2019) recommendation that digital-based SOPs are the foundation of modern public financial governance [29].

The implementation of this digital system is also directed at cross-work unit integration in the sub-district so that there is no data duplication or inconsistency in reports between units. This integration effort requires close cooperation between employees and a clear division of roles in system operations. In Katz and Kahn's open system theory, an organization can function optimally if its systems and subsystems interact harmoniously through process integration [19]. Although it is still in its early stages, positive results are beginning to be seen in the form of increased reporting speed, consistency of financial data, and ease of access to information for leaders. This is the foundation for continuing digitization in other functions such as procurement of goods and services, digital archiving, and public services. This early success shows the importance of pilot projects as a strategy to test effectiveness before full-scale implementation, as suggested by Zhang in his four-stage model of e-government development [2].

Table 3. Medan Amplas District Budget Realization Table for 2024

Parameter	2023	2024	Change
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IT Spending (%)	3.56%	1.39%	▼ 61%
Real. Network Infrastructure	Rp588 Million	Rp161 Million	▼ 72.6%

Based on comparative data between 2023 and 2024, there is a significant decrease in the priority of information technology (IT) and network infrastructure spending in Medan Amplas District. The percentage of IT spending decreased from 3.56% in 2023 to only 1.39% in 2024, reflecting a decrease of 61%. This indicates a shift in focus or a decrease in allocation to the digitalization sector which previously received more attention. In addition, the realization of network infrastructure spending also decreased drastically from IDR 588 million in 2023 to only IDR 161 million in 2024, which means a decrease of 72.6%. This decrease has the potential to slow down the digital transformation process, especially in terms of strengthening the network as a basic infrastructure supporting the government's digital system.

Optimization of network infrastructure is a fundamental prerequisite in supporting digital transformation in government environments, including at the sub-district level. In the context of Medan Amplas Sub-district, the allocation of capital expenditure for network infrastructure of IDR 192.9 million with a realization reaching 83.67% indicates the government's seriousness in supporting the digitalization of financial management. Although this achievement is quite good, there is still room for improvement in terms of network quality, area coverage, and routine maintenance which are determining factors in the effectiveness of the digital system.

According to Kuziemski in the Information Systems Success framework, the success of information system implementation is highly dependent on adequate technical infrastructure, which includes hardware, software, and reliable communication networks [30]. Without optimal network infrastructure, digital financial applications implemented at the sub-district level will experience operational constraints such as access delays, data loss, or even system failures. This shows that investment in network infrastructure is not only a technical issue, but is the main foundation in achieving administrative efficiency. In addition, the Technology Acceptance Model theory emphasizes that the perception of usefulness and ease of use of technology greatly influences individual acceptance of digital systems [6][31]. In this case, if the network used is often problematic or slow, then the negative perception of the system will increase and reduce the motivation of the apparatus to utilize the digital platform optimally. Thus, network optimization not only supports technical aspects but also creates a work environment that supports the adoption of technology psychologically.

At the implementation level, network infrastructure is the backbone for connectivity between work units in the sub-district environment. Digital-based financial management requires a system that is integrated between the treasurer, secretariat, and other technical units. When the available network is stable and has a wide reach, the process of inputting and monitoring financial data can run in real time and accurately. This supports the concept of real-time governance which is an indicator of the success of a modern digital bureaucracy. Although budget realization has reached more than 80%, several technical obstacles such as connectivity disruptions during peak hours, bandwidth limitations, and lack of supporting technical personnel are still found. This indicates that budget allocations need to be adjusted not only for initial procurement but also for periodic maintenance and improvements. As conveyed by Krisno, a reliable information system requires a continuous technology life cycle, including hardware upgrades and software updates [9]. Meanwhile, research by Salmon shows that the success of bureaucratic reform is very much determined by the availability of information technology facilities and infrastructure that can guarantee the speed and accuracy of public services [19]. In the context of Medan Amplas District, if the network infrastructure is optimized to the maximum, there will be significant improvements in the process of financial reporting, supervision, and data-based decision-making.

Network optimization efforts must also consider the aspect of equal access. Based on field observations, several parts or rooms in the sub-district office still experience gaps in access to a stable internet network. This is contrary to the principle of equity in digital transformation underlined by the OECD, namely that every part of a public organization must have equal access to digital resources so that the transformation is not unequal and exclusive [32] [29]. On the other hand, the involvement of local internet service providers and collaboration with the Medan City Communication and Information Agency is a strategy that can strengthen technical support and expand network coverage. This cross-sector collaboration supports the theory of collaborative governance which emphasizes that digital innovation in the public sector will be more effective if it involves external actors who have technical competence and supporting resources.

Network optimization also needs to be accompanied by digital risk management policies such as data backup, firewalls, and network security systems. This is in line with the principle of information assurance conveyed by Haleem, that data security and integrity are vital components in public financial information systems. If the network is not equipped with an adequate security system, the potential for financial data leaks or manipulation will increase [10]. Thus, although the allocation of the network infrastructure budget shows a positive initial commitment, Medan Amplas District still needs to continue strengthening this infrastructure through increasing technical capacity, regular maintenance, and professional network governance. These efforts will strengthen a sustainable digital ecosystem in public financial management, as well as realize more effective, transparent, and responsive governance in the digital era.

Digital Transformation Challenges at the Medan Amplas District Level

Digital transformation at the sub-district government level, such as that which occurred in Medan Amplas Sub-district, is inseparable from various complex and interrelated challenges. The digitalization process, which aims to increase efficiency, transparency, and accountability in regional financial management, is faced with the reality of local bureaucracy which is still limited by human resource factors, technological infrastructure, and conventional organizational culture. According to Lanin, e-government failures generally stem from the “design-reality gap” or the gap between system design and the reality of implementation in the field. This condition is very relevant in the context of Medan Amplas [27].

One of the main challenges is the limited capacity of human resources, both in terms of quantity and technical competence. Many sub-district officials do not yet have adequate digital literacy, especially in operating financial applications and other digital information systems. This has an impact on slow adaptation to new systems and triggers resistance to change. As explained by Davis in the Technology Acceptance Model, perceptions of the ease and usefulness of technology greatly influence users' intentions to accept and use the technology [31]. HR issues are also related to the lack of ongoing training. The training available tends to be general and not contextual to real challenges at the sub-district level. This condition causes low levels of self-confidence and practical skills among employees. According to Trischler, HR capacity development needs to be carried out continuously and based on local needs so that digital transformation can run effectively and sustainably [33].

The information technology infrastructure in Medan Amplas District does not fully support the implementation of digital systems. Limited stable internet networks, lack of hardware such as computers and scanners, and the absence of an adequate data security system are real obstacles. This is in line with Misuraca's findings which show that digital infrastructure is the main foundation in the implementation of e-government, especially in remote areas or at the sub-district level [34]. The absence of a special budget to support the rejuvenation of digital devices and services is also a structural constraint. The limited allocation of sub-district budgets is often more focused on physical programs and direct services to the community. As

a result, the aspect of digital transformation is not a priority. According to the Resource-Based View theory by Barney (1991), the success of an organization is greatly influenced by its ability to allocate and manage internal resources strategically, including in terms of technology [35].

Another challenge is the organizational culture that does not fully support innovation and technology adaptation. In many cases, there is still a tendency for officials to maintain manual work patterns because they are considered safer, more familiar, and more controllable. Blackburn in the Diffusion of Innovation Theory states that innovation will be difficult to adopt if it is not supported by social structures and organizational norms that are open to change [36]. Resistance to change also arises from the fear of losing control or role, especially among senior employees who are used to manual systems. This insecurity can lead to passive sabotage of the new system, such as refusing to use applications or continuing to store data in hard copy. This is reinforced by Cigler's Organizational Reinvention theory, which emphasizes the importance of the "unfreezing" phase in changing established organizational behavior [37].

Lack of coordination between work units is also a challenge in implementing digital systems. Each unit tends to work in silos without system integration, resulting in data duplication, inconsistency in reporting, and administrative errors. According to Zhang, effective IT governance must include cross-functional integration and a clear division of responsibilities to ensure system efficiency and accuracy [2]. Limited access to policies and technical guidelines is also an obstacle in implementing digital transformation. Many employees do not have a comprehensive understanding of digitalization procedures, including data governance and digital risk management. This shows a lack of strategic communication from the city government as policymakers to implementing units in the field. OECD (2019) states that the information gap between policymakers and technical implementers is one of the main causes of the failure of public sector digital transformation [38][29].

Limited on-site technical support. When technical problems such as system errors or failed data synchronization occur, employees often have difficulty finding quick solutions because IT personnel are not available in the sub-district. According to Melo and Mota, the success of technology implementation in the public sector is highly dependent on the presence of a responsive technical team that is ready to assist the user adaptation process [24]. From the community side, the lack of participation in the digitalization process also creates obstacles. Not all community-based financial services can be run online due to the low digital literacy of citizens. This digital inequality between the government and the community causes the implementation of digital not to run comprehensively. This supports the Digital Divide theory put forward by Warschauer, which highlights the importance of equal access and understanding of technology in a digital society [1].

The delay in decision-making in digital implementation is also a challenge in itself. Some digital initiatives are held back because they need to wait for approval from higher levels, or because of the lack of courage of unit leaders in taking risks of innovation. In this context, Heifetz's Adaptive Leadership model emphasizes the importance of responsive leadership and courage to make decisions in the face of complex changes [2][39]. Institutionally, the absence of specific performance indicators to measure the effectiveness of digital transformation also complicates evaluation and monitoring. Without clear indicators, the success of implementation is difficult to measure and improve.

Performance of Government Organizations in Medan Amplas District

The improvement in the quality of public services in Medan Amplas District is reflected in the ease of access to population administration services and other public services. The initial implementation of the digital system, although not yet perfect, has paved the way for increased bureaucratic efficiency and accelerated services. The financial reporting and verification process that previously took weeks can now be done in a matter of days through an integrated

digital system. This contributes to increasing the speed of decision-making, especially in financial management that is directly related to public services. However, this positive impact is still limited to areas that have been reached by digital infrastructure and staff who have undergone basic training.

In the infrastructure development sector, the Medan Amplas District continues to show quite good performance. Several important projects, such as improving the quality of local roads and building public facilities, continue to progress. Although the digital transformation in finance has not fully touched this area, project budget reporting and the process of disbursing funds have begun to be digitized through the Regional Financial Information System (SIKD) platform. This shows that the development process is now better documented, accountable, and monitored in real-time by management. However, the decline in information technology spending from 3.56% (2023) to 1.39% (2024), as well as a 72.6% decrease in the network infrastructure budget in the same period, are indications of a reduced fiscal commitment to the main supporters of digitalization. Meanwhile, community empowerment through social activities and cooperation remains the distinctive strength of Medan Amplas District. Community participation in environmental cleaning activities, community service, and supervision of local development are indicators of the success of participatory development. However, this spirit has not been fully integrated into the digital ecosystem. There are still many community-based public services that are not equipped with online platforms, largely due to obstacles to citizens' digital literacy and limited internet access. On the other hand, the biggest challenge faced is the limited development budget and minimal information technology training for the apparatus. This condition is reinforced by data that the majority of the total 228 employees (of which 146 are PHL) do not yet have adequate digital literacy capacity, and have not received ongoing training.



Figure 1. Digital Transformation in Financial Management of Medan Amplas District 2025

Solutions in Implementing Digital Transformation in Financial Management of Medan Amplas District Government

In facing various challenges of digital transformation in Medan Amplas District, several efforts have begun to be made, both by the sub-district government and through collaboration with external institutions. One solution that has been implemented is the implementation of technical training for sub-district officials who are directly involved in financial management. This training not only focuses on technical skills in using digital applications but also builds awareness of the importance of accountability and efficiency of public services through technology. This is in line with McClelland's view on the importance of competency development in improving the performance of public organizations [25]. Another effort that has begun to be implemented is the integration of financial information systems with platforms that are already used at the city level, thus enabling real-time data synchronization. This step aims to avoid duplication, increase reporting speed, and reduce errors in financial administration. In the context of Kuziemski's System Integration theory, synergy between systems will increase information cohesion and accelerate strategic decision-making [30].

In overcoming infrastructure limitations, sub-districts have begun allocating special budgets for hardware rejuvenation and improving the quality of internet networks. Support from the city government in the form of device grants and network improvements is crucial in overcoming technical constraints. This is in line with the Technology Organization-Environment (TOE) Framework approach from Tornatzky and Fleischer, which states that the success of technology adoption is influenced by the readiness of technology, the organization, and the external environment [40]. Strengthening internal regulations is also carried out in response to the need for clearer digital governance. Through the issuance of digitalization standard operating procedures, the apparatus has standard and structured work guidelines.

The importance of cross-sector collaboration is also beginning to be understood by sub-district governments. In some cases, sub-districts collaborate with universities and information technology institutions to conduct technical guidance, system trials, and studies on the impact of digitalization. This collaboration reflects the Quadruple Helix approach, which emphasizes synergy between government, academics, industry, and the community in developing public innovation [23]. In terms of organizational culture, sub-district leaders play a key role as agents of change. Efforts to approach individuals, provide examples of the use of digital systems by leaders, and provide performance-based incentives have begun to be implemented to reduce resistance to change. This is in line with Arnstein's Transformational Leadership concept which emphasizes the importance of inspirational leadership in encouraging the adoption of technological change [39].

The long-term solution that is starting to be designed is the development of a digital transformation roadmap at the sub-district level that involves all stakeholders. This roadmap functions to map the stages of digitalization, resource needs, and evaluation targets on an ongoing basis. According to Crosby, participatory strategic planning is the key to creating a shared direction and commitment in public organizations [23]. An evaluative approach to digitalization performance has begun to be implemented by creating measurable success indicators, such as increased reporting speed, reduced input errors, and staff satisfaction. This confirms the importance of e-performance measurement as stated by Kuziemski, who encourages the use of technology-based indicators in measuring the effectiveness of digital-based government programs [30].

CONCLUSION

Digital transformation in financial management in Medan Amplas District is a strategic step to improve transparency, efficiency, and accountability of public administration at the sub-district level. Based on the research results, it can be concluded that before digitalization, the financial management system was still manual or semi-digital, which caused slow reporting

processes, high risk of input errors, and lack of transparency of financial information. The initial implementation of digital transformation has shown the commitment of local governments to building electronic financial system infrastructure, although its implementation still faces various obstacles. The main challenges in this transformation process include limited human resources who are not fully digitally literate, minimal adequate technological infrastructure, and internal resistance to change. However, several efforts have been made in stages, starting from providing technical training, preparing digital SOPs, and integrating financial systems, to collaborating with external institutions such as universities and information technology providers. The role of organizational leaders in building an adaptive digital culture is also an important factor in facilitating the change process. Thus, digital transformation at the sub-district level is not only about adopting technology, but a multidimensional process that requires regulatory, structural, and cultural support. This research contributes to identifying the gap between policy and implementation in the field and offers solutions based on empirical conditions. These findings are expected to be a reference for policymakers and government officials in formulating more inclusive and sustainable digitalization strategies at the local government level. The implications of this study indicate that digital transformation in financial management at the sub-district level requires not only technological infrastructure, but also comprehensive improvements to human resource capacity, supporting regulations, and organizational culture. This study provides an important contribution in identifying real obstacles and offering solutions based on local conditions so that it can be a reference for local governments in formulating more responsive, inclusive, and sustainable digitalization policies to improve the efficiency and transparency of public financial governance.

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Author Contribution

All authors contribute equally to the publication of this paper, all authors read and agree to this paper, and all authors declare no conflict of interest.

Conflicts of Interest

All authors declare no conflict of interest.

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